BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a preferred embodiment of the system for extracting and dynamically displaying data in accordance with the present invention;

FIG. 2 is a graphical representation illustrating the context in which the system and methods of the present invention operate;

FIG. 3 is a graphical representation of an exemplary embodiment for a management record;

FIGS. 4A, 4B, 4C, and 4D are a flowchart of an overview of the preferred method for initializing and operating the system in accordance with the methods of present invention;

FIG. 5 is a flowchart of the preferred method for generating management record pointer families;

FIG. 6 is a flowchart of the preferred method for fetching data from an underlying data source and constructing management records;

FIGS. 7A and 7B are a flowchart of the preferred method for executing functions for a new set of management records;

FIGS. 8A and 8B are a flowchart of the preferred method for executing a filter for any number of management records and their pointer families;

FIGS. 9A and 9B are a flowchart of the preferred method for creating a dynamic document pointer for a new set of dynamic documents;

FIG. 10 is a flowchart of the preferred method for updating a management record for a new primary record instance;

FIGS. 11A, 11B, and 11C are flowcharts of the preferred method for updating a management record pointer instance for a changed primary record instance;

FIGS. 12A and 12B are a flowchart of the preferred method for executing a function for a changed primary record instance;

FIG. 13 is a flowchart of the preferred method for maintaining a function for a changed management record type or dynamic document;

FIG. 14 is a flowchart of the preferred method for maintaining a filter definition for changed management record type or dynamic document;

FIGS. 15A and 15B are a flowchart of the preferred method for executing a function for a changed management record pointer instance;

FIGS. 16A and 16B are a flowchart of the preferred method for executing a function for new

dynamic document pointers;

FIG. 17 is a flowchart of the preferred method for executing a function for a new or changed set of dynamic document pointers; and

FIGS. 18A and 18B are a flowchart of the preferred method for executing a filter for a changed dynamic document pointer.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In accordance with the present invention, a system for dynamically retrieving, manipulating, updating, creating, and displaying data from sources of Extensible Markup Language (XML) documents is shown in FIG. 1. A central processing unit (CPU) 12 connects with a display and input device 16 and a program memory 18. The CPU 12 is also coupled to the Internet 33 and an intranet 31 in a conventional manner. XML documents 37 fetched from the Internet 33 and intranets 31 are temporarily stored until they are converted into Primary Record Types (PRTs) 26 and Management Record Types (MRTs) 24. The system 10 also creates XML documents 37 that it exports to the Internet 33 and intranets 31 in a conventional manner.

The memory 18 also stores a Dynamic Document (DD) 20, a MRT 24, pointers for constructing and displaying DDs and MRs 22, and functions, filters & sorts 42 along with an operating system. The CPU 12, under the guidance of instructions received from the program memory 18, imported XML formats 38, and from the user through the input device 16, creates MRTs 24 and DDs 20, XML documents 37, and XML formats 38 and displays data on the display device 16. The methods of the present invention preferably extract data from the Internet 33 and intranets 31, perform functions and filters on the data, and store the extracted data as PRTs 26 in the program memory 18. The MRTs 24 are then further processed with other routines in memory 18 to be displayed as DDs 20 that include a user interface to display information on the display 14. Those skilled in the art will be aware that various equivalent combinations of devices can achieve the same results when used in accordance with the present invention.

Referring now to FIG. 2, the context in which the system and methods of the present invention operate will be described. As has been noted above, the present invention overcomes the problems associated with presently available tools for non programmers to easily modify the display format, functions, and filters operating upon information extracted from XML documents 37, In particular, the present invention removes the problems of interfacing with and analyzing data from XML documents 37 by providing DDs 20 and MRTs 24. A DD 20 is a mechanism for displaying, manipulating, and printing MRTs, and for mapping how changes to the MRTs should update one or more XML documents. The DDs provide user interfaces as well as display and organization rules